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The past, present and future of central banking

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Abstract
The financial crisis, on the one hand, and the recourse to 'unconventional' monetary policy, on the other, have given a sharp jolt to perceptions of the role and status of central banks. In this paper we start with a brief 'contrarian' history of central banks since the second world war, which presents the Great Moderation and the restricted focus on inflation targeting as a temporary aberration from the norm. We then discuss how recent developments in fiscal and monetary policy have affected the role and status of central banks, notably their relationships with governments, before considering the environment central banks will face in the near and middle future and how they will have to change to address it.

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I. Introduction

The financial crisis, on the one hand, and the recourse to 'unconventional' monetary policy, on the other, have given a sharp jolt to perceptions of the role and status of central banks. This paper starts with a brief 'contrarian' history of central banks since the second world war, which presents the Great Moderation and the restricted focus on inflation targeting as a temporary aberration from the norm. It then discusses how recent developments have affected the role and status of central banks, notably their relationships with governments, before considering the likely evolution in the near and middle future. It tries to cover a range of central banks but refers mainly to the Bank of England (BoE), the Federal Reserve System (Fed) and the European Central Bank (ECB).

II. A 'contrarian' history of modern central banking

One common interpretation of the post-1945 development of central banks depicts a movement, through interruptions and deviations, from multiple objectives pursued with difficulty to a single objective of price stability. In this view the Tinbergen principle – that to pursue *n* independent objectives policymakers need *n* independent instruments – provides a crucial background, and the introduction of (formal or informal) inflation targeting in the 1990s and 2000s represents the final solution to the assignment problem. An alternative interpretation is that the latter period *qua* Great Moderation was an unusual interlude in which it appeared possible to focus on a single objective; but this turned out to have been an illusion, and a costly illusion at that.

In the aftermath of the second world war the world of central banking was very different from before. Interest rates were exceptionally low, debt ratios exceptionally high, and central banks were typically much more subordinate to their governments (some, like the BoE and the Banque de France, were nationalised in this period, while the Fed was subject to strong

government influence). At the same time the rise of Keynesian ideas on macroeconomic policy meant both greater emphasis on the objective of full employment and a shift towards fiscal rather than monetary policy.

That shift was then consolidated in the fixed exchange rates of the Bretton Woods international monetary system, which, even in the context of exchange controls and initially limited convertibility, meant that monetary policy had to be assigned primarily to external objectives and (as spelt out in the Mundell-Fleming model) was essentially unable to affect domestic income. From general convertibility in 1958, with the US fixing the dollar price of gold and other countries pegging to the dollar, central banks in many developed countries became focused mainly on the maintenance of the exchange rate parity. This should not be considered an example of exchange rate targets as a precommitment device to stabilise market expectations, since there was no concept of time-inconsistency amongst economists or policymakers. Moreover, insofar as central banks' hands were tied by the announced exchange rate parity, this was more a protection against government interference than a guarantee to the private sector that they would not succumb to temptation. However, fixed exchange rates in this period probably helped to provide something approaching price stability for many countries and probably compensated in part for the limited independence of most central banks (as shown in the early codings of Grilli, Masciandaro and Tabellini, 1991; and Cukierman, Webb and Neyaptı, 1992). In the US, on the other hand, once the Accord with the Treasury had been agreed in 1951 the Federal Reserve Board was able to act with considerable independence, and there was even greater autonomy for some continental European central banks – notably those of West Germany and Switzerland – where the continental European liberal tradition of sound finance had been less affected by the Keynesian revolution.

The 1950s and 1960s were also a period of relatively few financial crises, in the developed world at least. Eichengreen and Bordo (2003) list no banking crises in industrial or emerging countries between 1945 and 1971 (but 21 currency crises in industrial and 16 in emerging countries). Reinhart and Rogoff (2009, Appendix A3) list no banking crises in high-income countries between 1939 and 1970. This may have been due in part to the wide range of administrative and regulatory controls to which banks were subject, and to the exchange controls which inhibited international competition. But its effect was probably to downgrade the issue of financial stability in the minds of central bankers as well as academic economists. The major macroeconomic debates of the time were focused on the determinants of aggregate demand and the causes of inflation, and financial stability concerns were largely absent.

Over this period, then, central banks had in most cases low degrees of central bank independence (CBI) and they, together with their political masters, had a plethora of objectives – full employment, economic growth and external equilibrium, as well as price stability – and a limited number of effective instruments, in the form of interest rates and possibly credit controls as well as fiscal policy instruments. Policy therefore tended to oscillate between concentration on different objectives – indeed this was the reason for the 'stop-go' which characterised UK macro policy, while the 'dashes for growth' of 1963-4 and 1971-3 were attempts to break out of that cycle. However, on average inflation was low in most industrial countries, economic growth was good in many, and unemployment was very low by later standards. Thus in many countries economic performance was sufficiently satisfactory for people to look back to it with nostalgia during the following decades.

Towards the end of the 1960s the international framework, in the form of the Bretton Woods system of fixed exchange rates with limited capital mobility, was beginning to disintegrate under the impact of international tensions associated with the looser monetary policies pursued in the US in the context of its war in Vietnam and the Great Society spending programmes of President Johnson. By 1973 all major currencies were floating against each other, and inflation had clearly become a much more important problem. The mid-1970s were a difficult period of major change in policymaking, from more or less Keynesian views of the causes of inflation and the role of monetary relative to fiscal policy, to more or less monetarist views on inflation and the introduction of monetary targets.[1] These monetary targets, and the exchange rate targets which came shortly after, were 'intermediate' targets in which policymakers tried to control intermediate variables that would in principle determine the variables (inflation, income) in which they were ultimately interested, rather than trying to target directly a range of variables.

There was also a turn towards financial liberalisation in the Anglo-Saxon countries from the late 1960s or early 1970s, with the crucial abandonment of exchange controls in the UK coming in 1979, and this process got under way in continental Europe also from the early 1980s. In its wake, but with some lags, came changes to financial regulation, which were in part a response to the eruption of some serious banking crises – the secondary banking crisis of the early 1970s in the UK, the savings and loans crises in the US in the 1980s – which occurred after the early steps in financial deregulation.

In the new understanding of macroeconomics which emerged, the acceptance of the natural rate hypothesis narrowed the scope for stabilisation policy from the medium to the short term (although it was realised that the natural rate or NAIRU could move over the longer term in

response to microeconomic changes and/or hysteresis effects), and some formulations suggested that external equilibrium was also related to internal equilibrium. Given the failure of the 'dash for growth' strategy, the emphasis on the determinants of the NAIRU (which fed into the 1980s emphasis on 'supply-side' policies) and the rise of 'endogenous' explanations of growth, the rate of economic growth came to be understood as a microeconomic rather than macroeconomic phenomenon. In this case the (independent) objectives of macro policy could be drastically simplified, at least for the medium term, to price stability, only. At the same time fiscal policy had gone out of fashion, partly because of the difficulties of controlling public expenditure under conditions of high inflation in the 1970s, partly because its use in the US was subject to both political contest and significant lags (compared to those involved in monetary policy). But with objectives reduced to just one a single instrument, identified in this period as the rate of monetary growth rather than the rate of interest, would be adequate under the Tinbergen principle.

Monetary targeting turned out to be much harder than had been expected. The official explanation given in the Anglo-Saxon countries (e.g. Bank of England, 1986) was that structural change in the financial system (unleashed by financial liberalisation) meant that money demand had become too unstable for targeted control of the money supply to be sensible, but the extent of the increase in instability is unclear (Cobham, 2002: 40-2; Garratt et al., 2009). A more important factor may be that central banks had come to realise that they simply did not have the tools to control money supply precisely enough. The argument for monetary base control had been lost in the US's 'monetarist experiment' of 1979-82, and in the UK debate on the issue in 1979-81. Instruments such as credit controls had come to be seen as costly and inefficient, in countries such as France (where the system of credit controls was much more extensive) as well as in the UK (where the short-lived indirect credit control

of the ‘corset’ could not be sustained once capital controls had been removed). And the strange practice of overfunding (selling more government debt than the budget deficit), which allowed the UK to miss its targets less than it might otherwise have done, created so many distortions and inefficiencies in the financial system that it too had to be abandoned (in 1985).

In most Anglo-Saxon countries monetary targeting was succeeded by a period with no formal framework for monetary policy, while continental Europe retained its monetary targets but embarked also on tighter exchange rate coordination. The latter arrangements (the Exchange Rate Mechanism of the European Monetary System) became more binding after 1983 (when the French government committed itself to the ERM), and even more serious after 1987 (when the focus of operations shifted away from direct foreign exchange market intervention towards interest rate coordination). The exchange rate parities can be thought of as devices to allow other countries to import anti-inflationary credibility from Germany and its central bank, and they can reasonably be termed exchange rate targets, insofar as they were clearly designed to influence expectations by visibly tying the hands of the central banks. The UK after much debate joined the ERM in 1990 but soon dropped out when the speculative pressures of 1992 made clear to the authorities what membership really meant.

By then policymakers in New Zealand had tried a different tack, with considerable success. After its introduction there in 1989-90, formal inflation targeting spread rapidly to the non-US Anglo-Saxon countries (Canada 1991, UK 1992, Australia 1993), to other small developed countries (e.g. Sweden 1993), transition countries (e.g. Czech Republic 1997) and then emerging market and developing countries (e.g. Brazil, Chile 1999; Ghana 2007) (see Roger, 2010, and Schmidt-Hebbel, 2010). This monetary policy framework reflected a shift towards targeting the final rather than some intermediate variable, and a shift towards a more

rule-based strategy with less room for discretion (in line with academic arguments about time-inconsistency); above all it involved an overwhelming concentration on a single objective, price stability, via a single instrument, the policy interest rate. It can be shown that inflation targeting is superior to monetary or nominal income or exchange rate targeting in terms of its ability to deal with different sorts of demand shocks, but it is highly destabilising for supply shocks (Cobham, 2002, chapter 1). However, supply shocks could be finessed by an extension if necessary of the time horizon (King, 1997: 438), and on Bean's (1998) analysis it turned out that a range of different preferences on the part of policymakers would all produce the same path for returning to the target from a shock, so there was no need to think about the trade-off between price stability and output stability. In the meantime the Fed in the US began to act pre-emptively (Goodfriend, 2002), in the start of a process which transformed its operations over time into those of an informal inflation targeter, and the monetary policy strategy chosen by the European Central Bank when it commenced operations in 1999 was broadly similar insofar as it involved an informal inflation target (definition of price stability) and a forward-looking setting of interest rates within a context of central bank independence and a floating exchange rate. Academic economists tended to think of inflation targeting in terms of a Taylor rule in which the policy interest rate responded to deviations of inflation and output from some targets, but in practice central banks took account of a wider range of information and tried to identify the nature of the shocks they faced.

During the 1990s many countries changed their laws to increase the independence of their central banks. With respect to the key criteria in the CBI assessments of Grilli et al. (1991) and Cukierman et al. (1992), central banks in developed countries now typically no longer had to lend to their governments on easy, or indeed any, terms and did not participate in

primary government debt markets; did not require government approval of their monetary policy; had statutory requirements to pursue price stability; and set their own policy rates (Cobham, Cosci and Mattesini 2008; Laurens et al., 2009). There had always been debates about both the measures of CBI and the relationships between CBI and economic performance (Forder, 1998; Mangano, 1998). In particular, CBI measures had some explanatory power in cross-section but not in time series analyses, and this led, for example, to appeals to 'informal independence' which emphasised factors such as social and political attitudes to the division of responsibilities between government and central bank and to inflation, the technical expertise of the central bank and the central bank governor's own personal independence (Cobham, Cosci and Mattesini, 2008). But in the Great Moderation inflation was indeed much lower and the advantages of statutory CBI became generally accepted.

Thus from the mid-1990s to the crisis in 2007 monetary policy appeared to have reached a new form, even a final resting-place, which focused heavily on price stability rather than output, and represented a clear solution to the assignment problem. The arrival at this new mode of operation had resulted from the interplay of both changes in macroeconomic theory (notably the natural rate hypothesis and then rational expectations) and changes in the national and international environment (notably the breakdown of the Bretton Woods system and the political trends which facilitated the introduction of CBI in a more accountable form). Its relative success for over a decade was then facilitated by good luck, in the form of a benign environment with few significant negative supply shocks, as well as by good policymaking.

At the beginning of this period central banks' economics seems to have been 'grounded' by the need to deal with the turns and twists of the 'real world'. But as time went on central banks came to give more and more emphasis to the real business cycle-type supply shocks emphasised by New Keynesian economists such as Woodford (2003), which – provided they were small and/or positive – did not need much policy response, while downplaying the possibility of demand shocks which might have required a stronger response.

The common assumption that monetary policy had reached the culminating point of its evolution also involved a narrowing of the focus of policy to the neglect of financial stability, a narrowing which could not be justified by theory in the same way as the shift in focus away from output stabilisation. Although some economists had claimed that price stability would prevent financial instability (Schwartz, 1995) this was always more difficult to substantiate than the contending hypothesis that price stability contributed to financial stability (Issing, 2003). However, an alternative support for the pure focus on price stability was provided in the form of the new argument by Bernanke and Gertler (1999) that monetary policy should not respond to asset prices: these authors accepted that asset price bubbles could not be ruled out (markets were not guaranteed to be always efficient), but argued that monetary policy should respond to them only insofar as they had implications for aggregate demand and inflation. This would involve picking up the pieces after a bubble had burst rather than trying to stop its growth in the first place, or, in terms of the later jargon, 'cleaning' rather than 'leaning'. But this would be done as a response to the undershooting of inflation which would otherwise occur in the case of a crisis-induced recession, so that the focus of monetary policy on the single objective of price stability was preserved. The alternative strategy promoted by Kent and Lowe (1997) and Cecchetti et al. (2000) was that central banks should 'lean against the wind' of asset prices, so as to limit or prevent the growth of asset price bubbles (and

reduce the size of subsequent bursts). This strategy was rejected in part because it was seen as involving an additional objective for monetary policy (Allsopp, 2010).

This narrowing of focus became without question the dominant perspective among academic economists and central bankers, aided perhaps by the switch in modelling towards micro-founded models which were calibrated (and could then be simulated) rather than estimated. Indeed, the dotcom bubble appeared to have burst but been successfully treated, by the Fed's very low interest rates in the early 2000s. On the other hand it was necessary to take a Panglossian view of the forex market in order not to believe that significant exchange rate misalignments, as well as costly volatility, were possible.[2] Meanwhile house prices in many countries experienced long and sustained rises (well above the rate of inflation) to which the Fed, in particular, paid little attention (Cobham, 2012). Moreover, as is now well-known, the DSGE models central banks were using by the mid-2000s lacked financial sectors and were unsuitable for analysing financial or banking crises, or house (or other asset) price bubbles. The narrowing of focus may also have been helped in some countries by the removal of financial supervision from central banks (in the UK, in 1997). What happened next was the unpredicted eruption of the most severe financial crisis since the 1930s. Financial stability was brought back sharply into the set of objectives for central banks, after the brief interlude of inflation targeting.

The lesson to be drawn from this history is that a state of the world in which the central bank has to consider multiple objectives and is unable to forecast major shocks should be regarded as the norm. While a world in which central banks need to address only one objective with only one instrument would be neat and tidy, and largely rule-based, monetary policy strategy needs to be designed for a world in which there may be (known or unknown) unknowns

around the corner, and central banks need both the alertness and the discretion to confront them. That means that central banks' expertise, on the one hand, and reputation and credibility, on the other, are even more important.

III. The crisis, unconventional monetary policy and central banks

The eruption of the crisis was a brutal shock to the optimism and even complacency which had come to characterise central bankers and academic economists. The economy behaved in ways that had not been expected, asset prices became a major concern again, fiscal policy re-emerged as a key instrument for governments, monetary policy had to find new techniques and instruments, and the relationships between 'independent' central banks and governments were put into question.

(1) Measures to supply liquidity

From early on in the crisis central banks began to introduce a range of measures to supply liquidity to the banks and financial markets, measures which had not been used for many years, if ever before (Banque de France, 2010, chapter 3). The Bank of England, for example, supplied additional reserves to banks through term auctions from September 2007 (when it also provided specific support to Northern Rock).[3] From December 2007 it undertook extended collateral long term (3 month) repos, not just of gilts but of residential mortgage-backed securities and later other assets. In April 2008 the BoE introduced a more formal special liquidity scheme under which it swapped Treasury bills in exchange for high-quality but temporarily illiquid securities, e.g. mortgage-backed securities, held by banks, for up to 3 years. This was a temporary scheme with the 'drawdown' period concluded in January 2009, so that the last swaps were unwound in January 2012 (John et al., 2012). The Bank also introduced a discount window facility from October 2008 under which banks could borrow

gilts against a range of collateral (with the fees reflecting the type of collateral and the size of the drawing); this was designed as a permanent facility, with transactions normally up to 30 days, but some up to a year allowed from January 2009. These facilities in turn required the Bank to make adjustments to the existing arrangements by which banks set their own reserve targets; and to introduce for the first time Bank of England bills to drain off the excess liquidity arising from these operations.

The Fed did broadly similar things, as appropriate in the US context. In particular, it operated twice weekly term auctions for dollars in December 2007 and January 2008, set up a Term Securities Lending Facility and a Primary Dealer Credit Facility in March 2008, introduced an 84-day term auction facility in July 2008, and provided dollars via swap lines to the BoE, the ECB, the Swiss National Bank and other central banks from September 2008.

The European Central Bank (ECB) did some of these things too, in particular it set up a Term Auction Facility from March 2008, which was subsequently expanded in size and term. However, since relatively more financial flows in the euro area pass through banks rather than markets (compared to the US and UK), and since the ECB has direct dealing relationships with a much wider range of banks and other counterparties, it could provide liquidity support more easily and directly through those contacts and had less need to think about specific financial markets.

(2) Fiscal policy

Many developed economies, and the US in particular, embarked on major fiscal stimulus packages in 2008-9, while nearly all developed countries saw sharp increases in their budget deficits.[4] Those deficits fell by a little in 2010 and are projected to fall further later, in

response to fiscal consolidation programmes. Figure 1 (data from the OECD's November 2011 *Economic Outlook*, estimates for 2011-13) shows that in the advanced economies fiscal deficits (as percentage of actual GDP) increased sharply in 2008 and 2009, but fell back in 2010 and 2011. The US and the UK had some of the largest increases, from 2.9% in 2007 to 11.0% in 2009, and from 2.8 to 11.6% respectively, while the euro area deficit increased from 0.7 to 6.4%.

This use of fiscal policy was in sharp contrast to its rather limited use in most developed countries in the preceding decade or so of the Great Moderation. In France, Germany, the UK and the euro area, in particular, the budget deficit fluctuated much more widely after 2007 than before. As regards debt ratios (Figure 2), in the US the 1990s were mostly years of fiscal consolidation, and the 2000s up to the crisis were years of slow expansion, with the debt ratio falling from 70% in 1994 to 55% in 2000 but rising to 62% in 2007. The UK, French and German debt ratios had broadly similar trajectories (but less wide variation), Japan's debt ratio rose in almost every year, and the euro area's debt ratio was relatively stable. All these countries experienced sharp rises in 2008 and after, particularly the US, Japan and the UK.

(3) Unconventional monetary policy

Central banks also responded to the crisis by embarking on 'unconventional' monetary policies, beyond the liquidity measures mentioned above. Before this the Fed, the BoE and the ECB had all experienced large expansions of their balance sheets from the second half of 2008 as the result of their liquidity policies (see, for example, Miles, 2010), but from 2009 they undertook specific and, in some sense, new monetary policies. In particular the Fed and the BoE undertook large-scale asset purchases or quantitative easing, while the ECB implemented, rather later, measures which had broadly similar effects and have been

identified by some observers as quantitative easing even though the ECB rejects that term (Bordes and Clerc, 2012). These measures are discussed extensively in other papers in this review, and do not need to be summarised here (see also Banque de France, 2010; Borio and Disyatat, 2010; Nelson, 2012; and Bordes and Clerc, 2012).

(4) Deficits, debt and quantitative easing in the US and UK

The new fiscal and monetary policies were consistent in the sense that the asset purchases in both the US and the UK were roughly of the same order of magnitude as the rise in the fiscal deficits. In the US, the budget deficit had averaged $158.7 bn, or 1.3% of GDP, over 2000-2007, but rose to 3.2% of GDP in 2008, and 10.2% ($1412.7 bn) in 2009, before falling back slightly (see Table 1, data from the Congressional Budget Office). The total for Fed asset purchases from late 2008 to early 2010 was $1725 bn, or 12.1% of 2008 GDP, and the second wave of asset purchases (November 2010 to June 2011) amounted to a further $600 bn (4.2% of 2008 GDP) (Nelson, 2012). The former amount was roughly in line with the whole budget deficit over this period, and the latter amount was broadly equivalent to the budget deficit over the months concerned. In the UK, the budget deficit had averaged £22.4 bn, or 1.7% of GDP, over 2000-2007, but rose to 5% of GDP in 2008 and 11.4% (£159.2bn) in 2009, before falling back slightly in 2010 and by more in 2011 (Table 2, data from the Office for National Statistics). Asset purchases under quantitative easing from March 2009 to March 2010 amounted to £200 bn, or about 14% of 2008 GDP, rather more than the budget deficit over that period, and the second round of QE between October 2011 and May 2012 involved another £125 bn which is comparable to the budget deficit for the whole of 2011. The corresponding data for the issuance of government debt show that gross (net) issuance, which had averaged £40.4 bn (£19.2 bn) between financial years 2000-01 and 2007-8, shot up to £227.6 bn (£211.0 bn) in 2009-10, but came down quite sharply in the following year.[5] Thus

the combination of fiscal stimulus and quantitative easing in the US and the UK looks like a coordinated fiscal and monetary expansion – except that other forces were depressing monetary growth and in both countries net monetary growth was very low over the period.

An important issue with regard to the near future is how long the budget deficits are going to continue. Figure 1 suggests that deficits in developed countries, particularly the US, Japan and the UK, will remain large to 2013, while comparable estimates from the IMF in January 2012 are slightly less pessimistic about the advanced economies and show emerging economies with much smaller deficits. These forecasts are strongly affected by assumptions about how much the current high deficits reflect the automatic cyclical impact of the deepest recession for decades, which will be run off once economies return to trend or at least to trend growth, and how much they reflect discretionary changes in public spending and/or taxes. Figure 3 shows the corresponding development of cyclically adjusted balances, and Figure 4 plots both types of balance for each of the US, the UK and the euro area. There are two striking things about these graphs: first, the structural balances show a pronounced cyclical variation which is broadly similar to that of the financial balances; and secondly, the change in the difference between the two balances, which should show the extent to which the budget deficits increase for purely cyclical reasons, is rather small: around 3% for each of the US and the UK between 2007 and 2009 or 2010, and slightly less for the euro area.[6]

The implication is surely that we do not have good adjustments for the cyclical effects, and that some of what is categorised as structural may in fact be cyclical. This would be consistent with the findings of Darby and Mélitz (2008) that there are a number of spending elements which are sensitive to the cycle other than those usually considered in standard cyclical adjustments. But it may also reflect the possibility that in as sharp a cyclical

fluctuation as this other elements of spending or tax revenue may be affected in ways which are not easily classified as purely cyclical or structural. For example, in the initial stages of the crisis tax revenues from banks and their senior employees' compensation packages fell strongly. If a genuine rebalancing of these economies away from finance and towards manufacturing were to take place, such a fall would look more structural. But with bank profits and bonuses reviving as they have been doing in 2011-12 it looks more cyclical.

What all this implies is that budget deficits *may* decrease more sharply than expected if and when economic growth revives, so that some of the call for fiscal consolidation and austerity would seem even more misplaced than it does already, to at least some observers (e.g. Wren-Lewis, 2011). However, in the short to medium term central banks face an environment in which fiscal policy has been used much more actively than for many years, and fiscal deficits will continue to be much larger.

(5) Immediate effects on central bank independence

Strictly, central banks which are making or have made asset purchases are not participating in the primary debt markets: they do not buy debt at the point of issue (in the way that the BoE did in the past), instead they enter the secondary market and buy there – but in a context in which it is understood that the government is making large primary issues and the central bank is buying heavily in the market. Moreover, the debt purchases involve increases in both the banks' reserves and the bank deposits of the private sector, which are the main element of most definitions of the money stock. To many observers, this looks like central bank finance of the government's fiscal deficit, and as was shown in the previous section the amounts involved on both sides – deficits and asset purchases – are very large. In addition, the standard arrangement by which central bank surpluses are transferred to their country's

Treasury means that governments' interest payments on the debt held by the central banks are (approximately) returned to the governments, leaving the net debt service cost on that debt close to zero.[7] On the other hand, central banks can expect to sell their government bonds back into the market later at lower prices, once economies have revived and interest rates have reverted to more normal levels, but they have been guaranteed against such capital losses by their Treasuries. All this means that there is a level of coordination between government and central bank which is quite different from what happens under the standard inflation target setting of interest rates by central banks.

At the same time public support for central banks and their independence may have been weakened by the banks' perceived failure to head off the crisis, on the one hand, and some of their responses to it, on the other. In the US the Republican right has called more strongly for closer oversight of the Fed, while in Europe the increasingly overt tensions between the Bundesbank and the ECB may be weakening the idea of central banks as impartial and above the political fray.

IV. The future

If we assume that at some point economic growth will revive, central banks will need to consider the exit from their unconventional monetary policies. At the same time work is under way to introduce new macroprudential tools which might enable them to prevent further crises, and these tools will require some rethinking of the institutional arrangements between central banks, financial regulators and ministries of finance. It is arguable that whatever progress is made along these lines central banks should retain the option of using monetary policy if necessary to contain credit or asset price booms. And all of these changes

in turn will require considerable adjustments to the ways central banks operate, in terms of their expertise and their governance.

(1) Exit

It is useful to identify two aspects of the exit from unconventional monetary policies. First, on the narrower aspect of the exit from QE, in both the US and the UK, quantitative easing was originally presented as a way of taking monetary expansion further when interest rates had been reduced to their minimum (the Fed's decision to make large scale asset purchases in March 2009 came three months after its last interest rate reduction, whereas in the UK the final reduction in interest rates and the introduction of QE were both agreed at the March 2009 MPC meeting). It was therefore natural to think of the exit from QE as involving first sales of the assets acquired and next a rise in interest rates, but considerations of flexibility and financial market stability favour the reverse order (Borio and Disyatat, 2009: 6). Chairman Bernanke's February 2010 testimony to Congress on the Fed's exit strategy clearly envisaged that interest rates would be tightened before assets were sold, and Governor King (2010: 4) referred to 'a rise in Bank Rate with asset sales being conducted later in an orderly programme over a period of time, leaving Bank Rate as the active instrument.' For the ECB, on the other hand, its non-standard policy measures were intrinsically limited-term measures which would expire naturally if no decision was taken, but thinking involved a coordination of interest rate tightening and running off of liquidity measures without a definite order (González-Páramo, 2009; Cœuré, 2012).

However, there is also a wider aspect of exit: the exit from the broader changes in the relationships between governments and central banks. This is likely to be much more

difficult, if it is not possible to revert to the simple assignment of inflation targeting. The matter is considered below in section III(6).

(2) New macroprudential tools

One of the main responses to the financial crisis on the part of central bankers has been to call for additional 'macroprudential' instruments to deal with asset price fluctuations and other possible sources of systemic risk, and work is underway both to define and establish such instruments, and to improve the collection and analysis of data to facilitate their implementation. The latest FSB-IMF-BIS progress report distinguishes three types of macroprudential instruments: tools to address threats from excessive credit expansion, such as time-varying capital requirements, dynamic provisions, caps on loan-to-value ratios, and caps on debt-to-income ratios; tools to address key amplification mechanisms, such as limits on maturity mismatches and limits on net open currency positions or mismatches; and tools to mitigate structural vulnerabilities and spillovers, such as additional loss absorbency for systemically important financial institutions (SIFIs), and resolution requirements for SIFIs (FSB-BIS-IMF, 2011; see also Lim et al., 2011). The interim Financial Policy Committee (FPC) in the UK (which has commenced operations in advance of the relevant legislation being passed) has called for powers of 'direction' over the countercyclical capital buffer, sectoral capital requirements and a leverage ratio. The one completed development so far is the provision in Basel III for national authorities to operate countercyclical capital buffers which would require banks to increase their own capital in good times but allow them to use it to absorb losses in bad times (BCBS, 2010). Overall, some of the potential macroprudential instruments impinge heavily on the standard operations of central banks, but others less so.[8] However, they are all designed to mitigate systemic risk, which is bound to continue to be a

concern of central banks. Thus what is crucial for central banks is the overall institutional framework within which these instruments are used.

(3) Macroprudential institutional frameworks

Modern discussion of the institutional framework for financial regulation and monetary policy goes back at least to Goodhart and Schoenmaker (1995), who considered whether bank supervision should be combined with monetary policy in the central bank, or hived off into a separate agency. They argued that decisive arguments in favour of combination, on the one hand, or separation, on the other, were lacking, but the historical trend – associated with the emergence of large individual financial institutions and the weakening of domestic cartels insulated from international competition – was towards separation. However, as they emphasised, the role of the central bank as the supplier of last resort liquidity means that even if a separate agency is responsible for financial regulation and supervision the central bank has to work closely with it, while the need for taxpayer support of large institutions in trouble means that the ministry of finance has to be involved too. In the UK, after the Financial Services Authority was set up outside the BoE after 1997, appropriate coordinating arrangements were formalised in a Memorandum of Understanding and a Tripartite Standing Committee. But these arrangements are thought by some to have not worked well during the crisis, and it is for that reason that the new government is shifting financial supervision and regulation back into the BoE. The new FPC, whose remit is to monitor and counter systemic risk in the UK financial system, will (like the MPC) have a mix of 'internal' members (from the BoE and the new regulatory authorities) and 'external' members, plus a non-voting representative from the Treasury.

The introduction of macroprudential tools together, perhaps, with a greater emphasis on systemic risk as well as individual bank failure suggests that institutional relationships need to be situated within a wider context which covers the financial stability committees which are being created in a number of countries, as well as financial supervisors, central banks and treasuries. A number of different models can be envisaged (Nier, Osiński, Jácome and Madrid, 2011), and different models may be appropriate for different countries. The key arguments for consolidation of these functions within a single institution (the direction in which the UK is moving) are that the flow of information would be improved and trade-offs internalised, while the key argument for separate, but coordinated, agencies is that different perspectives may make errors of omission or commission less likely. Wachtel (2010) has argued for the combination of monetary policy, financial supervision and financial stability oversight in the same institution. On the other hand, Buiter (2012: 6) has argued for 'multiple, overlapping regulatory and supervisory bodies, properly staffed and funded, with regular turnover of the top personnel and a significant role for "outsiders" and independent members in key decision making committees' as the best way to 'minimize the risk of regulatory capture and groupthink'. Buiter also distinguishes between direct and cognitive capture, where the latter is the rule rather than the exception, and therefore the key problem to be addressed. Goodhart (2011: 152) has noted the benefits of 'having large and systemic intermediaries seen from two differing viewpoints', and has also raised the issue of whether the excessive consolidation of functions within the central bank would be acceptable 'for a non-elected body within a democratic society'. But whatever model is chosen, it is clear that central banks will have to pay much more attention (than, for example, the BoE or the Fed paid during the Great Moderation) to systemic risk, on the one hand, and probably also to individual financial institution risk, on the other. The macroprudential policymakers will also

have to coordinate with the government, as the key source of financial support for financial institutions in difficulty.

(4) Monetary policy and asset prices

There is widespread agreement both that financial regulation failures contributed to the crisis and that the introduction of some macroprudential instruments would help to prevent further crises. But there is much less agreement on whether monetary policy itself contributed to the crisis or should be concerned with asset price developments which might presage a systemic crisis.

Before the crisis the majority or orthodox view, first articulated by Bernanke and Gertler (1999), was that monetary policy should respond to asset prices only insofar as the development of asset prices affected inflation or output. More precisely, the argument was that: i) bubbles and misalignments are hard to identify in real time or even ex post; ii) it is not possible to use interest rates to affect asset prices significantly without serious adverse effects on the real economy; so iii) policy should focus on softening the impact if a bubble bursts rather than trying to stop a bubble expanding in the first place; however, iv) since asset price movements affect aggregate demand policymakers should take account of them in making inflation and output forecasts (but not attempt to target them directly or indirectly). By contrast, the minority view promoted by Kent and Lowe (1997) and Cecchetti et al. (2000) argued that a) asset price misalignments (like the output gap) are hard but not impossible to measure and identify; b) asset prices contain information on future inflation so that work on forecasting asset prices could improve inflation forecasts; c) responding to asset prices could reduce the probability of bubbles and boom-bust investment cycles, and improve performance in hitting inflation targets; so d) monetary policy should systematically 'lean

against the wind' of asset prices, that is, raise (cut) interest rates when asset prices were rising (falling) too fast or too far; moreover, e) if the public and the markets understand that the central bank is doing this that will enter into their expectations about asset prices, and that would help to stabilise them.

The crisis may have increased awareness of the cost of ignoring bubbles until they burst, but the Anglo-Saxon central banks, in particular, remain attached to their previous views (Cobham, 2012) and have argued that the development and adoption of macroprudential instruments is the appropriate solution. Others have continued to argue in one way or another for 'leaning against the wind' (e.g. Wadhwani, 2008; Fatás et al., 2009; Bloxham et al., 2010; Borio, 2011; Allen and Rogoff, 2011). While the new macroprudential instruments should help to prevent credit and asset price booms, there seem to be no good reasons for ruling out a priori a monetary policy response. But 'leaning against the wind' (LATW) would look rather different in the new post-crisis context. It should be thought of as a 'backstop' policy which would come into operation if other measures seemed to be unable to contain a credit or asset price boom, more precisely a policy which would deal with unexpected eventualities (unknown unknowns which are not caught by the new macroprudential instruments). It is a natural human tendency – affecting central bankers[9] as well as politicians and generals – to prepare for the last war rather than the next, and LATW should be seen as the reserve policy for cases where the next war turns out to have been unpredicted and unprevented. In addition, the existence of an LATW policy needs to be publicly known, so that it feeds into expectations about asset prices and so exerts a restraining influence upon them.

(5) Central bank expertise

While during the Great Moderation the tasks of central banks appeared to have been narrowed down to inflation control via interest rates, it is obvious that in the coming period central banks are going to have to pay attention to a wider set of objectives which includes financial stability, at the highest level, and probably the stability of a range of specific markets and institutions at lower levels. This alone means that central banks need to develop their expertise in new areas. But there are two other aspects in which central bank expertise is crucial.

First, it is now widely, if not universally, recognised that the macroeconomic theory which had come to dominate academic and then central bank economics in the decade or so before the crisis suffered from important failings: the inadequate modelling of the financial sector, the reliance on representative agents and perfect market clearing with only very specific and limited frictions, and the downplaying of demand shocks in favour of supply shocks (e.g. Borio, 2011; Buiter, 2012; Goodhart, 2010; Pesaran and Smith, 2011; Miller, 2011). Central banks need to rethink some of their macro analysis and models to ensure that they do not make similar mistakes again. Given the 'groupthink' and inertia in academic economics this will be difficult; it will require changes in central bank recruitment, and changes in the training of new and existing staff.

Secondly, in a situation of increased powers in the hands of, or subject to the influence of, the central bank, there is a danger that ideas and attitudes will cease to be challenged, and policymakers will come to miss important features and developments in the economy. Central banks need to develop mechanisms to counter this, by ensuring that they take soundings from outside and that inside a full range of possible views is always articulated and taken into account.

(6) Central bank governance

As noted above, central bank independence has been at least put into question by the closer relationships with government required under quantitative easing. But other developments in the crisis and in the coming period will also affect central bank governance in significant ways.

First, while the lending to governments involved in quantitative easing will be run off once economic growth returns, the rise in debt ratios will take much longer to reverse. In this case fiscal policy will not immediately revert to the concentration on micro issues which it had for much of the Great Moderation. Thus the issues of monetary-fiscal policy coordination, which were able to be largely neglected in the preceding period, will have to be addressed. Secondly, the likely macroprudential arrangements – and notably the increased in-house involvement in financial supervision and regulation at the BoE – will inevitably increase the contact between a central bank and its government, the likely pressure from the latter on the former and the possibility of 'political capture' of the central bank.

Central bank independence will therefore be harder to defend. The principal argument for CBI, in the form of time-inconsistency, is usually articulated in a context from which fiscal policy is absent. But if the fiscal authority insists on 'loose' as opposed to 'tight' policy, then, in a simple game theory framework, the monetary authority may be unable to impose its preferences for price stability and fiscal dominance will lead to inflation (e.g. Artis and Winkler, 1998). At the same time central bank accountability and transparency – both of which are more straightforward when the central bank has a single objective – will be more needed, to deal with the democratic deficit as well as with market expectations, but more

difficult to provide. Central banks will need to articulate clearly their additional objectives, give more explanation ex ante and ex post of their actions and demonstrate that they are open to a wide range of views and proposals.

V. Conclusions

This paper has argued that the simplicity of central banking in the Great Moderation – one objective, one instrument, neglect of asset prices and of systemic risk – was an unusual and extraordinary interlude between more normal periods in which central banks have to think about several objectives between which trade-offs are unavoidable. This is obviously true of the current period of crisis,[10] but it will also probably hold for the following period as well, with the greater use of macroprudential regulation and the involvement of central banks in that process, and the likely greater use of fiscal policy affecting the context in which monetary policy operates. With multiple objectives, and almost certainly more goal independence, the reputation and credibility of central banks are all the more important. The issue, therefore, is how to make the best of this complexity, how to ensure that the central bank undertakes its various tasks in the best, or least bad, way.

Economists are always happier talking about structures and about the incentives faced by rational agents. But central banking also depends heavily on more intangible factors such as the commitment and expertise of the key personnel involved. In recent years appointments to the Fed's Board of Governors have fallen victim to the vagaries and prejudices of the US's dysfunctional politics, the ECB's Executive Board appointments remain subject to inappropriate national political pressures and BoE MPC appointments have become only slightly more transparent than when they started. Of course, it is difficult to see how these types of appointments can be made in a genuinely independent way, but it should be possible

to increase the importance of technical expertise criteria so as to offset some of the political pressures, and to introduce at least a limited element of independence and transparency into the appointments process. Finally, other central banks could move, as the Bank of England is doing, towards the ECB's system of non-renewable eight year terms, which arguably provides a better balance between the need for independence and the need for turnover and renewal.

Notes

[1] See Artis and Cobham (1991, especially chapters 1-3 and 16) for this transition in the UK.

[2] See Treasury (2003) for the Pangloss and Cobham (2006) for some scepticism.

[3] From September 2008 it also, like other non-US central banks, provided dollar funds to banks through term auctions, with the dollars supplied by the Fed in swap agreements.

[4] See OECD (2009) for an analysis of the fiscal stimulus packages of 2008 and early 2009.

[5] Debt Management Office, Gilt Market Gross and Net Issuance History, at http://www.dmo.gov.uk/reportView.aspx?rptCode=D5C&rptName=100362549&reportpage=Gilts/Net_Issuance_Data/D5C.

[6] This calculation is not exact, because the financial balances are percentages of actual GDP but the structural balances are percentages of potential GDP, and the OECD assumes slower growth of potential output from 2009 (while actual output has declined sharply relative to potential). But the difference in denominators would not account for the cyclical pattern of the structural balances, which long predates the crisis.

[7] Moreover, gross debt service costs are held down by the effect of QE on long term yields.

[8] The adoption of such measures may halt or even reverse the trend towards financial deregulation which goes back to the late 1960s. Policymakers will need to pay close attention to the 'regulatory perimeter', that is the delineation of the institutions which are subject to these measures and the possibility of a further 'shadow' banking system which is not.

[9] It is arguable that one of the reasons the Fed was so opposed to LATW in the run-up to the crisis was that it believed it had dealt satisfactorily ex post with the bursting of the dotcom bubble, and its instinctive idea of asset prices was stock market rather than house prices.

[10] The BoE has linked future movements in Bank rate to the spreads between Bank rate and bank borrowing rates, which suggests that interest rate policy is already responding partly to

inflation and partly to financial conditions (King, 2011: 3). I am grateful to Chris Bowdler for this point.

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Table 1 US deficits and debt

year	total budget deficit $ bn	total budget deficit % GDP	debt held by the public % GDP
2000	-236.2	-2.4	34.7
2001	-128.2	-1.3	32.5
2001	157.8	1.5	33.6
2003	377.6	3.4	35.6
2004	412.7	3.5	36.8
2005	318.3	2.6	36.9
2006	248.2	1.9	36.6
2007	160.7	1.2	36.3
2008	458.6	3.2	40.5
2009	1,412.7	10.1	54.1
2010	1,293.5	9.0	62.8
2011	1,295.6	8.7	67.7

Source: Congressional Budget Office, 2012 report: *The Budget and Economic Outlook: Fiscal Years 2012 to 2022*

Table 2 UK deficits and debt

year	general government deficit £ bn	general government deficit % GDP	gross consolidated debt % GDP
2000	-34.876	-3.6	41
2001	-4.863	-0.5	37.7
2001	22.110	2.1	37.5
2003	38.625	3.4	39
2004	41.498	3.4	40.9
2005	43.039	3.4	42.5
2006	35.778	2.7	43.4
2007	37.961	2.7	44.4
2008	72.048	5	52.6
2009	159.169	11.4	68.2
2010	148.465	10.1	75.7
2011	124.582	8.3	82.9

Source: ONS, Government deficit and debt under the Maastricht Treaty, CRC tables, March 2012

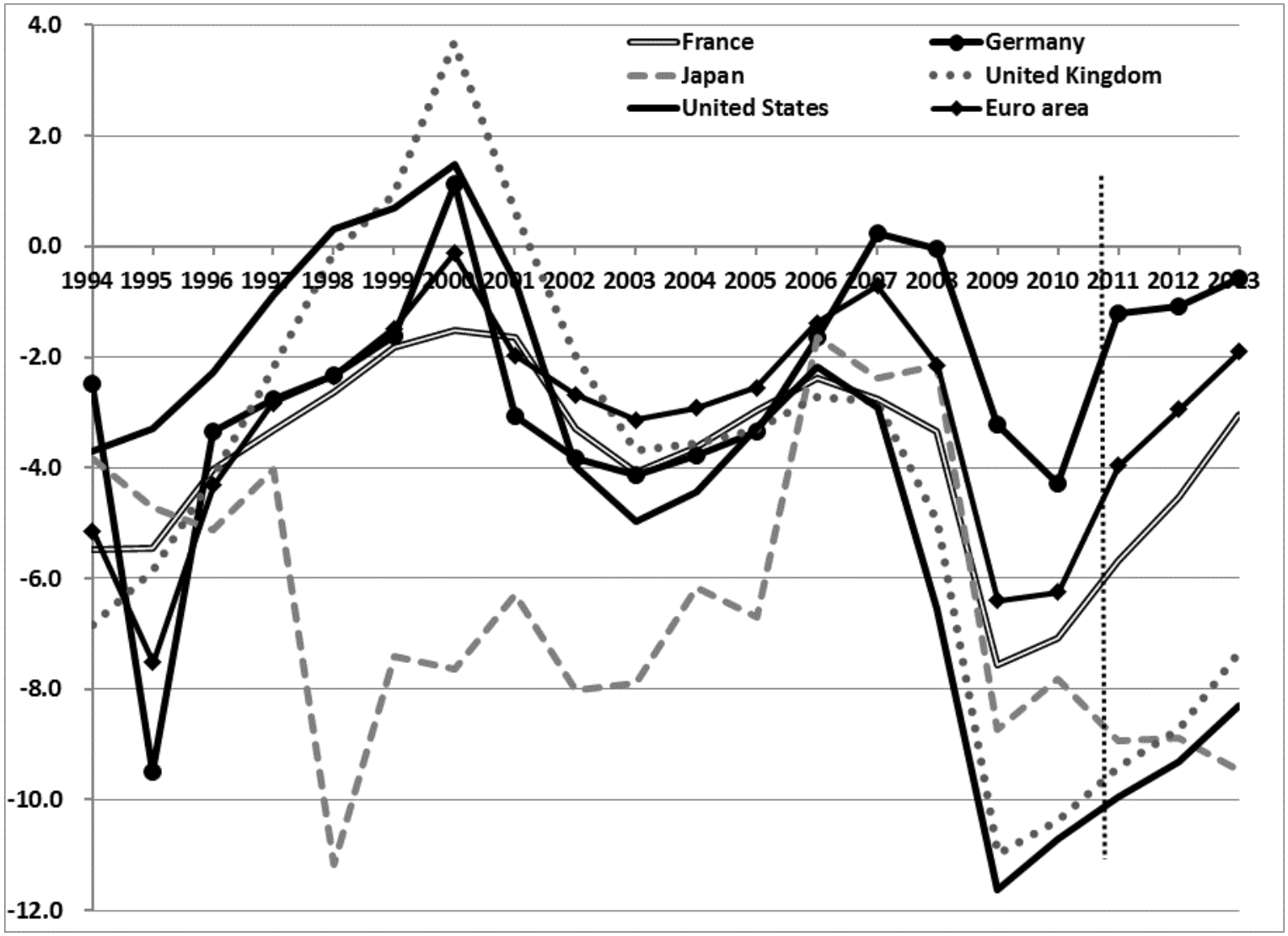

Figure 1: Financial balances (as % of GDP)
Source: OECD Economic Outlook, November 2011. Data for 2011-13 are forecasts.

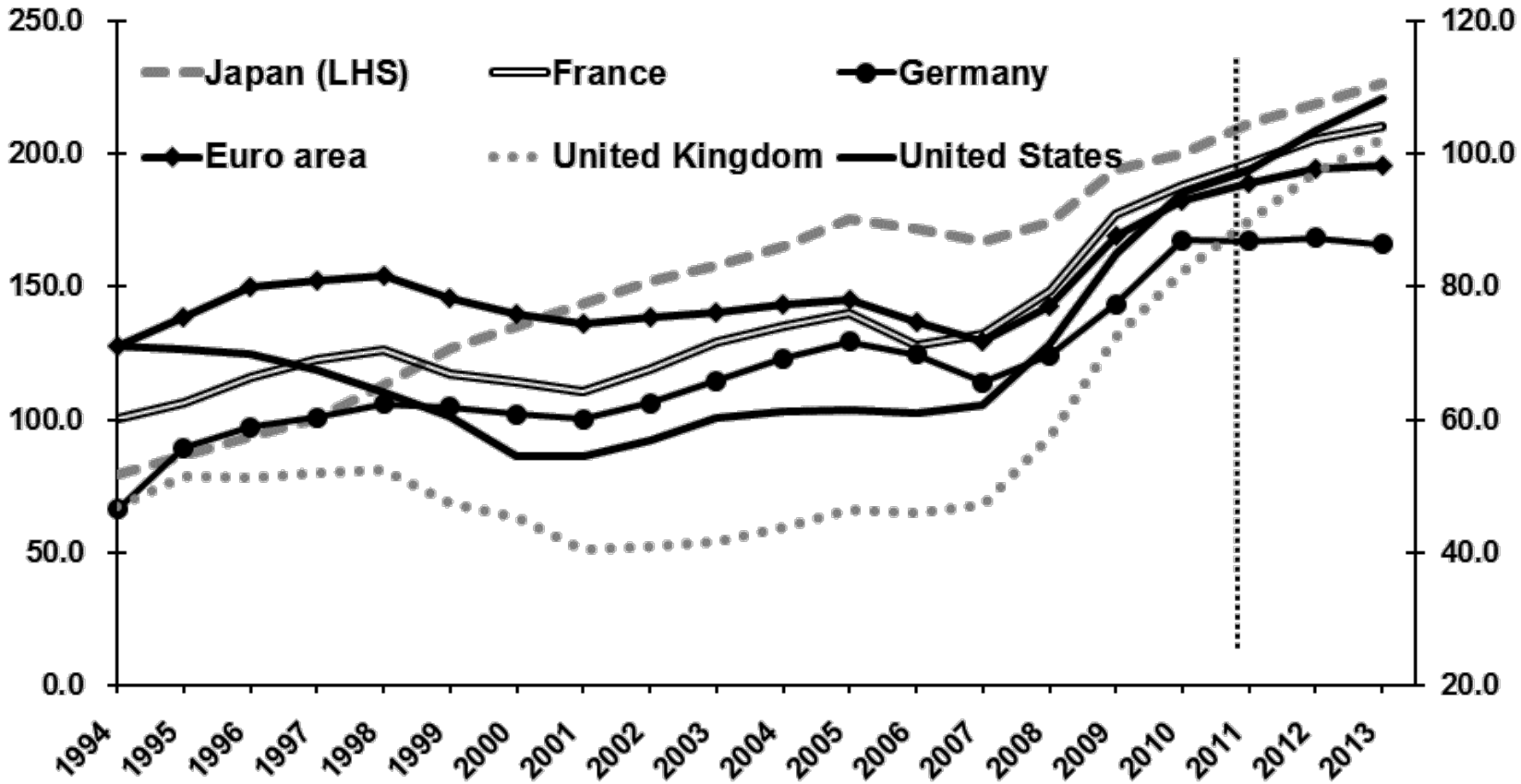

Figure 2: Gross financial liabilities (as % of GDP)
Source: OECD Economic Outlook, November 2011. Data for 2011-13 are forecasts.

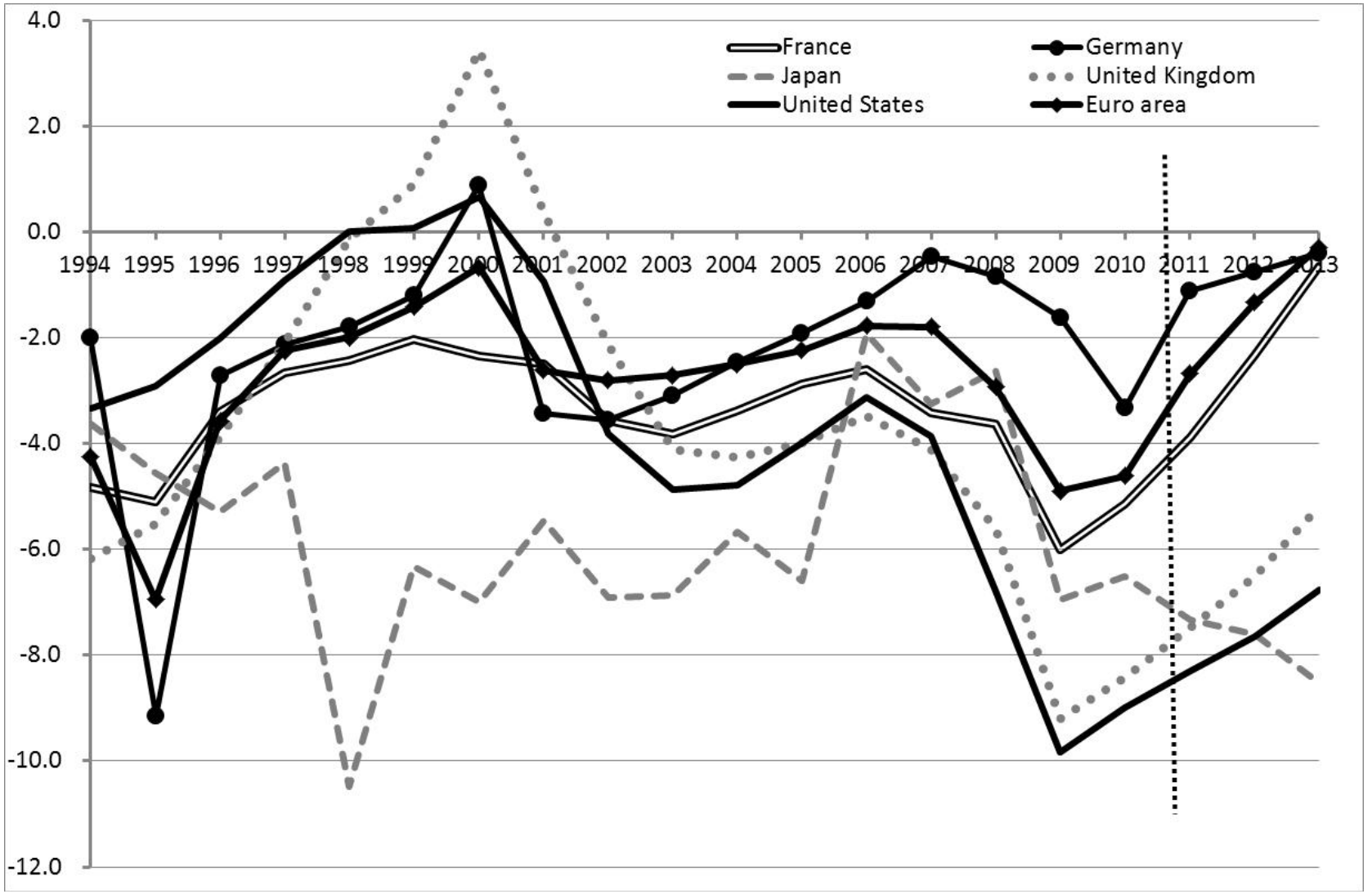

Figure 3: Structural balances (as % of potential GDP)
Source: OECD Economic Outlook, November 2011. Data for 2011-13 are forecasts.

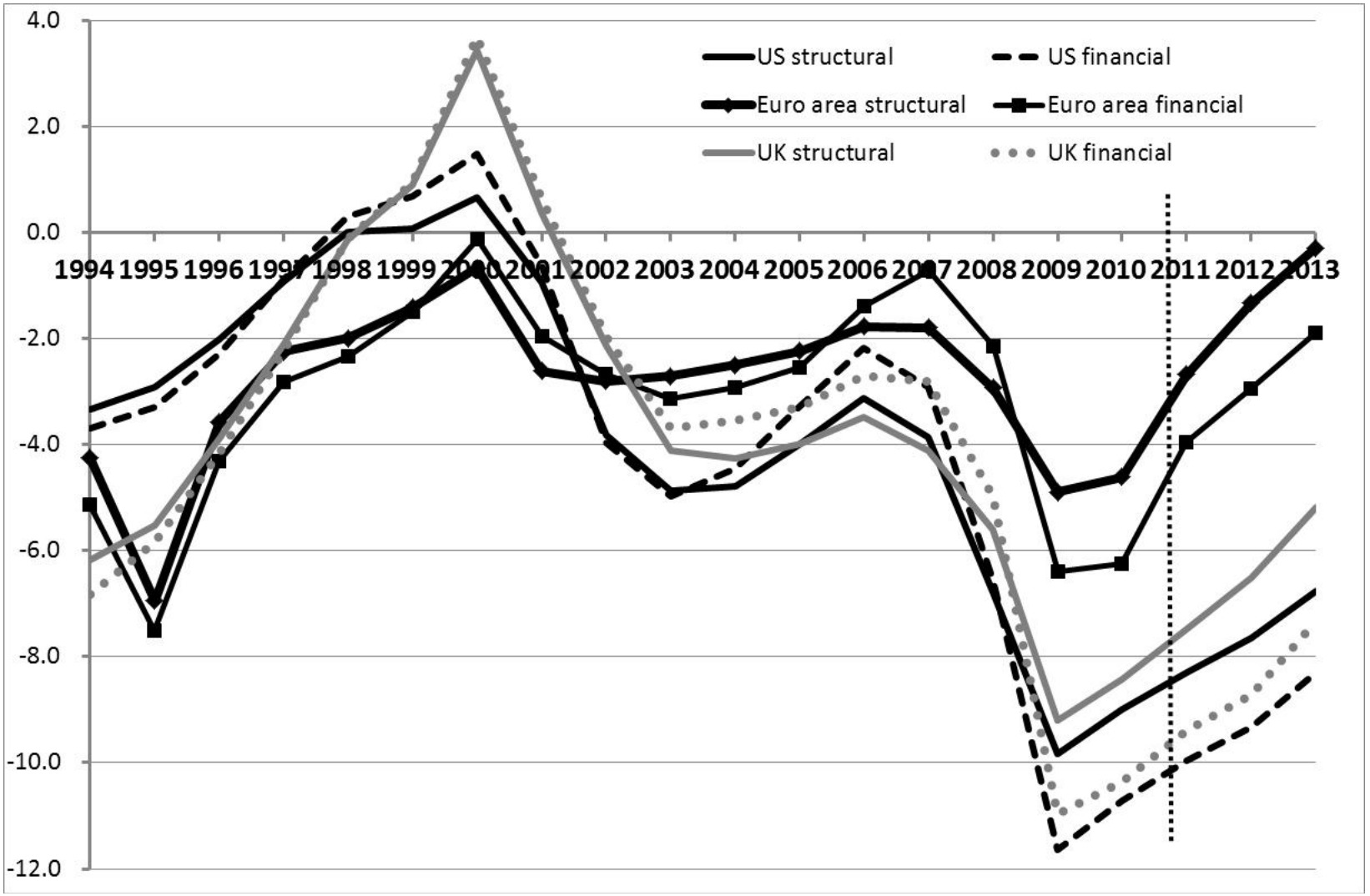

Figure 4: structural and financial balances

Source: OECD Economic Outlook, November 2011. Data for 2011-13 are forecasts.